

LIST

LONG ISLAND SINCLAIR TIMEX GROUP
INCORPORATING * NYTSE OF NEW YORK CITY
ISSUE: APRIL 1992

* NEW YORK TIMEX SINCLAIR ENTHUSIASTS

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 Trenton Computer Festival
April 11, 12 1992

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L. I. S. T.
5 PERI LANE
VALLEY STREAM NY 11581

TO:

FIRST CLASS MAIL
DATED MEETING NOTICE

SUN	MON	TUE	WED	THU	FRI	SAT
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

DONT FORGET L. I. S. T. MEETING at
EPM. SUNDAY, April 11, 12

LIST OFFICERS

PRES. HARVEY RAIT
TRES. ROBERT MALLOY
COR.SEC. JOHN PAZMINO
EDITOR. FRED STERN
LIBR. TOM SKAPINSKI

PLEASE SEND INQUIRIES TO:

LIST
MR. HARVEY RAIT
5 PERI LANE
VALLEY STREAM, N.Y. 11581

PLEASE SEND SUBMISSIONS TO:

LISTING
MR. FREDERIC STERN
214 ROBERTS ST.
HOLBROOK, N.Y. 11741

NYTSE

NYTSE MEETS ON MONDAY THE WEEK
AFTER THE LIST MEETING AT:
MISS KIMS RESTAURANT
PARK AVENUE SOUTH
BETWEEN 21 ST. AND 22 ST.
MEETINGS START 7:30 PM.

COMING EVENTS:

APR. 12, 1992 LIST MEETING.
APR. 20, 1992 NYTSE MEETING

MEETING MINUTES:

REPORTED BY:
FRED AND MICHAEL STERN

MAR. 8, 1992

HARVEY CALLED THE MEETING TO
ORDER AT 2:30PM.

CORRESPONDENCE

ROGER MELVIN FROM HELINA MONTANA
WROTE, ASKING WERE TO PURCHASE
A TS2068 MANUAL. HARVEY WILL
CONTACT HIM AND OFFER TO SELL
A COPY FROM THE LIST LIBRARY.

DON MALOOLY FROM EL PASO TEXAS
WILL PURCHASE (2) TS2040
PRINTERS THROUGH LIST.

THE ZX-92 EXHIBITION WILL BE
HELD AT CAMBRIDGE UNIVERSITY,
ENGLAND TO CELEBRATE THE 10TH.
ANNIVERSARY OF THE SINCLAIR
SPECTRUM.

OTHER NEWS

OUR SINCERE CONDOLENCES ARE
EXTENDED TO BOB GILDER ON THE
PASSING OF HIS FATHER.

HARVEY INFORMED US THAT STONEY
MC MURRAY CALLED TO SAY THAT HE
COULD NOT MAKE IT TO THE MEETING
AND THAT HE WAS HAVING A PROBLEM
WITH HIS QL AND PRINTER
INTERFACE. IF YOU CAN GIVE
STONEY AN ASSIST, CALL HIM AT
718-469-5948.

UPDATE MAGAZINE HAS ADVERTISED
THE FOLLOWING GREAT DEAL:
MECHANICAL INFINITY
515 E. MAIN ST.
PERU, IND. 46970
IS SELLING 5.25 INCH, DSDD AND
DSDD FLOPPY DISKS WITH TYVEK
SLEEVES AT \$18.00 FOR 100.

LIST PUBLICATIONS

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THE FOLLOWING ARE AVAILABLE
THROUGH LIST:

ZX-81/TS1000 TECHNICAL
TIDBITS

TECHNICAL TIDBITS PART II

SAVINGS AND LOAD OF THE TIMEX
COMPUTER

\$4.00 EACH.

CLASSIFIEDS

THIS CLASSIFIED SECTION IS
AVAILABLE TO ALL LIST MEMBERS
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THE ONLY RESTRICTION IS THAT
IT IS TO BE USED ONLY FOR THE
SEEKING, SELLING OR SWAPPING
OF SINCLAIR, TIMEX OR MICROACE
COMPUTER EQUIPMENT, PERIPHERALS
AND SOFTWARE.
LISTING, LIST, AND ITS OFFICERS
DO NOT ENDORSE, WARRANTY, OR
GUARANTEE ANY OF THE ITEMS
LISTED IN THIS CLASSIFIED
SECTION

I AM LOOKING FOR A DISK DRIVE
CASE, FOR FULL HEIGHTDRIVES.
FRED STERN 516-737-0963.

A FINAL WORD

MY NAME IS FRED STERN AND I AM
THE EDITOR OF THIS EDITION OF
LISTING.

WELL, THIS IS MY SECOND ISSUE
AND EVEN THE MICHAELANGELO VIRUS
COULD NOT KEEP IT DOWN.

THANKS TO MICHAEL STERN, TOM
SKAPINSKI, BOB MALLOY AND
SPECIAL THANKS TO DONALD LAMBERT
FOR THERE MOST VALUED ASSISTANCE
IN GETTING OUT THIS NEWSLETTER.

SEE YOU ALL AT THE NEXT MEETING.



ZX1r OLIVE ALIVE!

From the desk of the Editor

1301 KIBLINGER PLACE
AUBURN, IN 46706-3010
Tele: (219) 925-1372
03 01 1992

FREDERIC STERN,
214 ROBERTS STREET
HOLBROOK NY 11741

Dear Fred,



THIS ARTICLE IS ACTUALLY AN
EXCERPT FROM A LETTER I RECEIVED
FROM A GOOD FRIEND AND FELLOW
SINCLAIRIST, MR. DONALD LAMBERT.

DONALD AND I HAVE TRADED MANY
ARTICLES ABOUT THE TS1000 IN THE
LAST FEW YEARS, BUT THIS ONE
WHICH I SHARE WITH YOU IS ONE OF
THE MOST INTERESTING.

ENJOY - FREDERIC STERN
LISTING EDITOR

Last Wednesday morning (February 5th) as I was backing out of my garage a UPS truck began beeping the horn and the driver pulled up with a next day priority package for me. I was headed for Ft. Wayne (some twenty miles away) to do my twice a month (more or less) shopping so I set the package in the house and left. After I returned and put the groceries away I opened the box to find a T/S 1000. But the likes of which I have never seen before although I was aware of such modifications. With the computer in front of you as if you were to use it; on the left side just this side of the power jack is a tiny toggle switch. Sticking out of the case below the keyboard is a ribbon cable for an external keyboard. On the upper right corner is a row of switches, the left is a red push button switch labeled "reset"; to the right of that is a tiny toggle switch labeled "enable disable (8-16K)"; then is another tiny toggle switch labeled "64K and 16K". Then on the right edge is a row of three jacks labeled " SERIAL DATA PORT" with individual jacks labeled for one " EAR TAPE/T/S2048 " another " MIC TAPE " and the last labeled " MIC T/S2048 ". The three jacks were installed by instructions in an article "2K-SDP: A Serial Data Port" But the builder of the circuitry did not get it to work. I am in the process of trying to contact the author of the article that appear years ago. (It was confirmed that it did work).

But I had one difficulty: I do not have a tv in the computer room so I had to move a 19" tv in and then I could test the computer. I got a blank nothing. I flipped the switch on the left side still nothing. So I tried the ZX81 in the Suntronics key board case that has been monitorized but still had the tv capability. That too had nothing. I eyed the tv, I had a game tv box fastened to the tv by the screw terminals and touching the terminals with the screwdriver did not cause the screen to flicker at all. Luckily I had a game switch that screwed on and I tried that. With the ZX81 in the Suntronics keyboard case it worked. But not with the new computer.

So I took the back off and visually confirmed that the left switch was a power switch however I noticed a loose wire going to the switch's center terminal. Looking elsewhere I noted that a wire wrap wire going to a resistor on the reset switch was also loose. Also the resistor was loose. I resoldered the three places and replaced the case bottom and tested it.

I did the POKE 16389,255, POKE 16389,255 and NEW and then PRINT PEEK 16389 and got a report of 255. So the 64K in internal memory works. Without a monitor

circuit I really couldn't test the computer further. There is a circuit to be installed to address individual blocks of 2K of memory in the 8K to 16K area (or I could use a SCRAM board) so that the 2K area that both the Larken and the AERCO disk interfaces use can be switched off. I do need some of the 8K to 16K area if I want to use BBIDOS for the AERCO system since it LOADs the BOOT disk into that area. The standard DOS for the AERCO does not need that area. But BBIDOS makes a real disk system out of the AERCO so I want to use it that way.

I will consider what to do with the computer after I make the monthly trip to the ISTUG meeting in Indianapolis on February 29th. There is one person that works only with the T/S 1000 and I would like to show the computer to him.

The computer was sent to me by Terry Graham he had told me about one he had modified that way and I had asked him to do one for me if I sent the parts. He sent it to me and asked for some copies of manuals that he didn't have. A fair exchange, I think.

Now I can move the computer board to the Suntronics keyboard case and add the switches to the case or I can wire a board like that. All the ways I look at it with the ram on board the computer board will be one less connector problem to worry about. Presently the 8K to 16K is addressed as one 8K block but it is possible to address it in 2K blocks. Or I could try a SCRAM board- again back into the connector problem maybe. Only by trying will I find out.

The person was interested in the computer and got copies of the docs and may or maynot do the same conversion. The article was by Tim Stoddard.

ADJUSTING EASEL

by

BOB MALLOY

It recently came to my attention that some people who are using EASEL do not know how to adjust the axis in order to create a more revealing graph. As an example, if you enter a series of numbers ranging between 5000 and 5004 (in a bar graph) it will be quite difficult to see the differences in the heights of each bar. However, if you adjust the axis the differences will be quite apparent.

Adjusting the axis in EASEL is really quite simple. First, enter some numbers as indicated above. Next press the following keys in order:

F3

C

A

ENTER

Left Arrow

Down Arrow 3 times

Enter

A

ENTER



Now look at your graph. Even fractional differences are easy to see. You can even set your limits by pressing M instead of A when you are at the CHANGE AXIS LIMITS line.



GRAPHICS! TS-1000 TS-2068

Have you seen the new newsletter for the TS-1000?

Now! what great graphics, as well as hints, tips, and tutorials. This is a really bright spot for TS-1000 users. Anyone who is active with their TS-1000 should send for a copy. (It might be nice to include a little cash for postage. Also remember to put 40 cent stamp on your envelope)

The newsletter is called ZX-91 and comes from Andre Baune in Canada.

Now back to the graphics. I am always impressed when I see what talented people can do. Some people are so artistic. Others like me are best at appreciating what the really talented people can do.

Well when the graphic listings that produced the excellent artwork were offered, I sent my request for the printouts of the listings. When they came I looked them over and the program to print them also. It was written for the TS-1000 and was not easily converted to the TS-2068 since the graphic characters on these computers do not use the same codes. And the shaded graphics that the TS-1000 has don't appear at all on the TS-2068.

I should explain. My primary computer these days is the 2068. If you use this material as it was intended you will not have to change things as I did.

Back to what I was saying in the paragraph before the last. This was two problems that needed to be resolved.

The shaded characters could be made by employing the user defined graphics to simulate the shaded ones on the TS-1000. And a comparison, substitution, routine could be written to check the codes so the right graphics could be printed when the codes on the TS-2068 didn't match the TS-1000's.

What to do!...What to do!...Ask for help. So that's what I did.

I asked my son Keith to see what he could do to convert these listings to the TS-2068. All the D\$ lines are now DATA statements and the basic is redone. But you can now pretty much enter the listings the way Andre wrote them. Just leave the quotes off the series of numbers in the D\$.

Andre's graphics load in from line 999 up to whatever line number he uses for the end of his listing. You can save the files to merge into the program to view or copy them to a printer. Either a TS-2040 or a full size printer. (Z-PRINT works) and by RANDOMIZE USA the appropriate number a regular size or a very large copy may be printed to your full size printer. Also you can save the graphics as SCREEN\$ and load it into an art program that loads screens.

Now I can utilize these excellent graphics on my TS-2068, just as well as the TS-1000 people can. Thanks to Andre for his excellent artwork. And also to Keith for making my TS-2068 able to use Andre's graphics listings

Andre's address is

ANDRE BAUNE
304 CHATEAUGUAY, QUEBEC
CANADA J6J 4H5

My name and address is
TOM SKAPINSKI U.S.A.
7 ATKINSON LA
CORAM NY 11727-3004

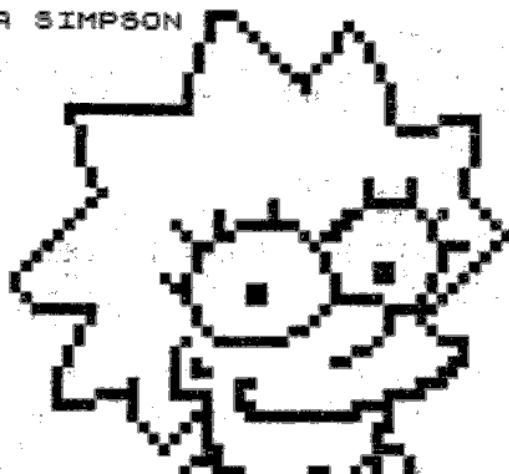
If you write either of the above addresses please send a self addressed envelope for a reply.

My program for the TS-2068 is on a Larken disk. But could be put on a tape and further changed so Oliger and Aerco and FDD systems could also use it.

I know I'll be busy entering Andre's excellent graphic lists as long as he is willing to make them available to the Timex community.

Again thanks to Andre, and to Keith.

LISA SIMPSON



Article By Tom Skapinski 3/5/92

****PROGRAM AS DESCRIBED IN ARTICAL 'GRAPHICS'****

```
5 INK 0: BORDER 4: PAPER 4: CLS
10 PRINT TAB 11; INVERSE 1;"DIPIC 2068"
15 PRINT ""Program to convert Andre Baune's graphics for the
TS-1000 to the TS-2068
      Just enter Andre's list as it appears in the sheet he sends
      to you with a change to DATA instead of DS"
20 PRINT ""This program by Keith Skapinski 7 Atkinson La Cora
m NY 11727 2/29/92"
25 PAUSE 220: CLS
30 PRINT ""-----WHEN PICTURE IS ON THE SCREEN,
INT TO 2040 PRESS (L) TO PRINT TO BIG PR. PRESS (P) TO PR
IT" PRESS (Q) TO QU

35 INPUT "LOAD NEW DATA? (Y/N) ";A$
40 IF A$="N" OR A$="n" THEN GO TO 75
45 IF A$<>"Y" AND A$<>"y" THEN GO TO 35
50 CLS : RANDOMIZE USR 100: CAT ""
55 INPUT "LOAD FILE? NAME.EX";A$
60 DELETE 900,: REM there must be a LINE at 900 to WORK
65 RANDOMIZE USR 100: MERGE A$
70 CLS
75 CLS : GO SUB 445
80 RESTORE 1000: REM 1000
85 LET B=0: GO TO 130
90 READ a: GO SUB 230
95 LET w=a
100 READ a
105 FOR l=1 TO a
110 IF B=0 THEN PRINT CHR$ w;
115 IF B=1 THEN PRINT #1;CHR$ W;
120 NEXT l
125 GO TO 195
130 READ u
135 FOR j=0 TO u
140 READ u
145 IF u=-1 THEN GO TO 205
150 IF J=22 THEN PRINT #1;AT 0,U;: LET B=1
155 IF J=23 THEN PRINT #1;AT 1,U;: LET B=1
160 IF J<22 THEN PRINT AT J,u;
165 READ u
170 FOR k=1 TO u
175 READ u
180 IF u=65 THEN GO TO 90
185 LET a=u: GO SUB 230: IF B=0 THEN PRINT CHR$ a;
190 IF B=1 THEN PRINT #1;CHR$ A;
195 NEXT k
200 NEXT j
205 LET a$=INKEY$
210 IF a$="q" OR a$="Q" THEN STOP
215 IF a$="p" OR a$="P" THEN RANDOMIZE USR 65350
220 IF A$="l" OR A$="L" THEN RANDOMIZE USR 64008: REM CHANG
ETHIS VALUE FOR YOUR PRINT DRIVER
225 GO TO 205
230 REM COVERT TS1000 -> TS2068
235 IF a=0 THEN LET a=32: RETURN
240 IF a=1 THEN LET a=130: RETURN
245 IF a=2 THEN LET a=129: RETURN
250 IF a=3 THEN LET a=131: RETURN
```



Trenton Computer Fest

Admission: General \$7 for 2 days
Student/Senior \$5 2 days
\$3 Sunday-only

Directions: From South via US1
into NJ on US1. Cross toll bridge
Go North past
I-295 interchange. Exit onto
Quakersbridge Road (South 533)
Left on Hughes Dr to left on
Old Trenton Road to main campus
entrance.

```

255 IF a=4 THEN LET a=136: RETURN
260 IF a=5 THEN LET a=138: RETURN
265 IF a=6 THEN LET a=137: RETURN
270 IF a=7 THEN LET a=139: RETURN
275 IF a=8 THEN LET a=144: RETURN
280 IF a=9 THEN LET a=145: RETURN
285 IF a=10 THEN LET a=146: RETURN
290 IF a=11 THEN LET a=34: RETURN
295 IF a=13 THEN LET a=36: RETURN
300 IF a=14 THEN LET a=58: RETURN
305 IF a=15 THEN LET a=63: RETURN
310 IF a=16 THEN LET a=40: RETURN
315 IF a=22 THEN LET a=45: RETURN
320 IF a=23 THEN LET a=42: RETURN
325 IF a=128 THEN LET a=143: RETURN
330 IF a=129 THEN LET a=141: RETURN
335 IF a=130 THEN LET a=142: RETURN
340 IF a=131 THEN LET a=140: RETURN
345 IF a=132 THEN LET a=135: RETURN
350 IF a=135 THEN LET a=132: RETURN
355 IF a=17 THEN LET a=41: RETURN
360 IF a=131 THEN LET a=140: RETURN
365 IF a=18 THEN LET a=60: RETURN
370 IF a=19 THEN LET a=62: RETURN
375 IF a=20 THEN LET a=61: RETURN
380 IF a=21 THEN LET a=43: RETURN
385 IF a=24 THEN LET a=47: RETURN
390 IF a=25 THEN LET a=59: RETURN
395 IF a=26 THEN LET a=39: RETURN
400 IF a=27 THEN LET a=46: RETURN
405 IF a>27 AND a<38 THEN LET a=a+20: RETURN
410 IF a>37 AND a<64 THEN LET a=a+27: RETURN
415 IF a=134 THEN RETURN
420 IF a=133 THEN RETURN
425 IF A>165 AND A<192 THEN LET A=A-101: RETURN
430 BEEP 1.1: PRINT "A: PRINT "ERROR! ";A;" WAS NOT CONVERTED."
435 STOP
440 REM SHADED GRAPHICS DATA
445 DATA 170,85,170,85,170,85,170,85
450 DATA 0,0,0,0,170,85,170,85
455 DATA 170,85,170,85,0,0,0,0
460 REM
465 REM FULL SCREEN COPY CODE
470 DATA 243,6,192,205,5,10,201
475 RESTORE 445
480 FOR i=0 TO 23
485 READ v
490 POKE USR "a"+i,v
495 NEXT i
500 FOR I=65350 TO 65356: READ X: POKE I,X: NEXT I
505 RETURN
510 RANDOMIZE USR 100: SAVE "DP2068.B1"
900 REM

```

FOR SALE:

GORILLA BANANA PRINTER W/RIBBON
 (PARALLEL) PRINTER CABLE REQ.
 \$ 35.00
 TS2040 PRINTER IN ORIG. BOX
 WITH 1 ROLL PAPER \$ 20.00
 TS1000 IN SUNTRONICS KEYBOARD
 WITH 16K RAMPACK \$25.00
 TS-2068 WITH SPECTRUM ROM CART
 IN ORIG. BOX \$50.00



DISK DRIVES...
 1 DSDD \$20.00
 2 SSDD \$10. EACH
 (FULL HEIGHT, ALL)

PLEASE CALL ME BEFORE NEXT MEET-
 ING SO I CAN BRING WHAT YOU ARE
 INTERESTED IN... (516) 732-1825
 TOM SKAPINSKI



**If there is sufficient interest I can publish the converted li
 stings. This way you can see exactly how the listing are entered

Modems and the Phone Line A Cautionary Note by Wes Brzozowski, SINCUS

When the maker of the Timex modem sold the remainder of its uncased boards as surplus scrap, and that scrap was purchased by dealers who still support the machine, it was a windfall for many users. Finally, those who couldn't justify the cost of a new modem were trying them out.

Well, it was a bit of a crap shoot. Some of the boards were obvious rejects, but most could be got working with little or no effort. But simply getting one working is no reason to be complacent. The electronic horrors that occur in phone lines are much worse than those inside your computer, and the only thing separating their potentially dangerous voltages from your delicate computer (and even more delicate body)... is a piece of surplus scrap.

That piece of scrap may have undergone no final testing to assure that its safety features were working properly. The presence of obvious rejects means that there will also be a lot of "unobvious" rejects. This means that no quality control of any sort may be assumed for these boards. As a final note, it's possible that the lack of an FCC registration sticker makes it illegal to plug them into the phone line.

Now, I seldom write "downbeat" stuff, and don't really want to do so now. But it's important to instill an attitude of caution among those who use these boards. The ranks of Timex users are thinning daily, and I don't want any of you to get "used up" before your time. We need each and every one of you.

I'm going to describe the Subscriber Line Interface portion of the modem, with emphasis on its safety features. This way, those of you who've been fixing them or adding RS-232 ports and such understand that some portions absolutely MUST NOT be played around with. I'll give no guarantee that this article covers all eventualities. It will show that you are at risk if you tamper with or use a tampered modem, and that even an untampered board is no guarantee of safety.

Let's first understand what happens on your Subscriber Line when you use your phone. Although it contains four wires, only two, the red and the green wires, are actually used. The incoming signals, as well as your own voice signals, are added together, and sent on just two wires. A clever circuit inside the phone makes sure that only a small portion of your own voice signal gets to your own earpiece.

When the phone handset is on the hook, a high impedance exists across the two wires. When you pick up the handset, it puts a low impedance across them. When the phone system sees that it can now put a certain level of DC current through your line, it sends a dial tone, and is ready to accept your dialing signals. At this point, the voltage across the wire is fairly low.

Pulse dialing (the rotary kind) is done by momentarily shifting the impedance from the low to the high value. One quick pulse will dial a "1". Two quick pulses will dial a "2", and so on. After you've dialed enough pulses, the phone system takes over and checks the phone line at the party you are calling.

If that party has a low impedance across its two wires, the line is busy, and you get a busy signal. If it has high impedance, the phone system sends them an alternating plus and minus 45 volt signal to ring the bell. The bell is connected across the same two wires, but has a capacitor in series, so that it won't allow DC to pass through. But the alternating signal has no problem making it ring. If they pick up the handset, the phone system detects the low impedance, stops sending the ring signal, and connects you. Now you can talk.

A redrawn schematic for the modem is included here. We'll be looking

at the far right hand portion, which handles these strange contortions from the phone line. As you can see, only the red and green wires actually go anywhere inside the modem circuitry.

When the relay K1 is energised, it closes a pair of contacts, and a low impedance DC path exists from the green wire, through R26, through the primary winding of T1, to R27, and to the red wire. This takes the modem "off hook". Momentarily opening the contacts will accomplish dialing. The components C22 and R28 across the relay contacts prevent an occurrence known as "dial tapping", where dialing one phone may cause an extension phone to ring slightly. In any case, the one relay can either take the modem off hook and dial, or it can "answer the phone", if it knows the phone is ringing.

The ring detector circuit consists primarily of the VM10B, and U13, and 4N29. The VM10B is a full wave rectifier that changes the alternating 45 volts to something more like a constant 45 volts DC. Like a phone bell, the circuit has a series capacitor, so that it does not produce a DC path across the phone line.

The 45 volts "DC" makes its way to U13, which is an optoisolator. This device essentially contains an LED and a phototransistor. Lighting the LED turns on the transistor, without any direct electrical connection. This isolates the 45 volt ring signal from the 5 volt logic in the modem, preventing damage. Realize, now, that one corner of U13 can see 45 volts, while the rest of the chip is connected to circuitry that will blow out in an instant if that voltage gets through. If, through a loose bit of wire, or any other short circuit, you allow the 45 volts to get across that chip, you'll likely lose both the modem and the computer.

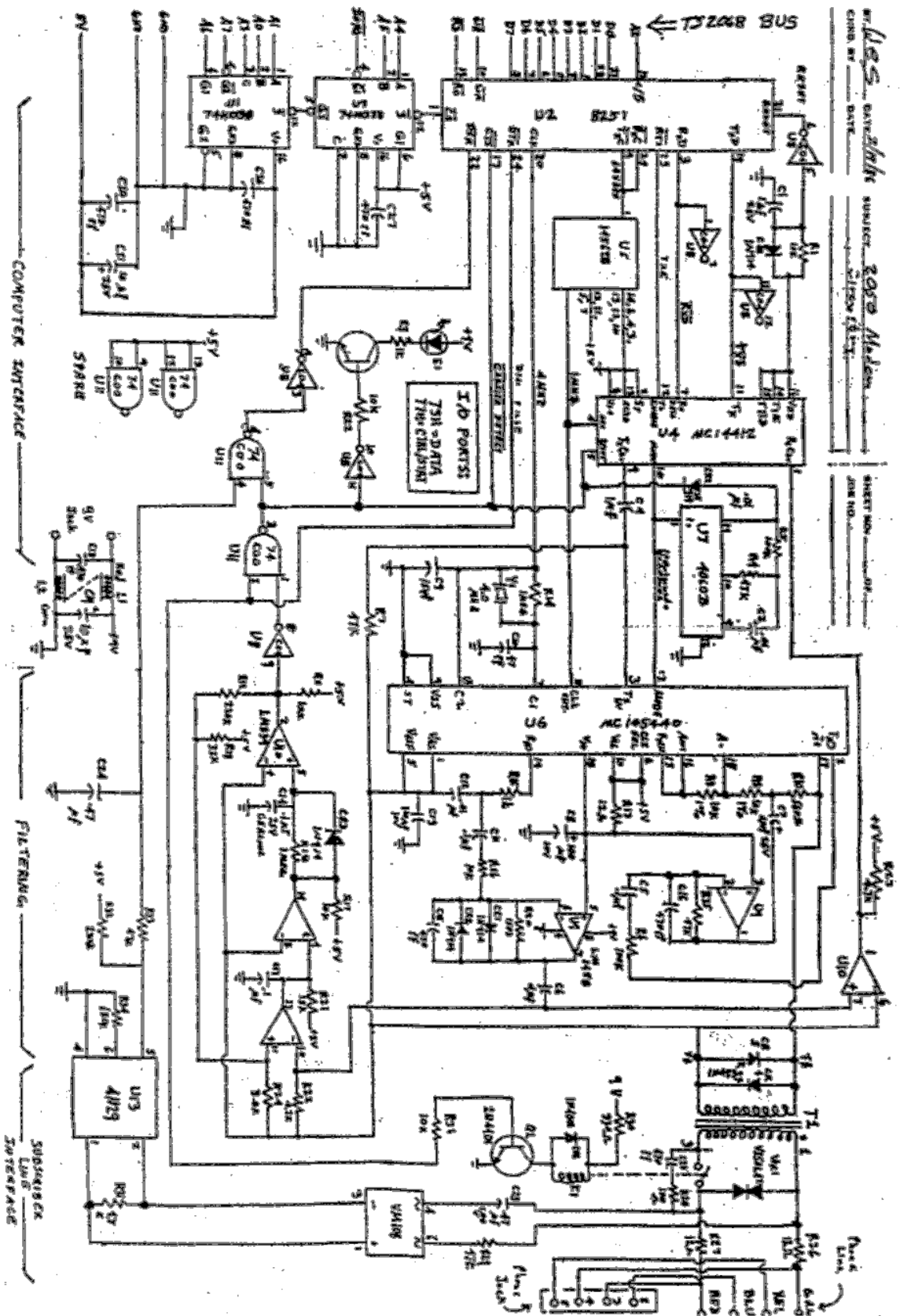
Note also that the ring signal can readily "light you up" if you happen to be touching the wrong part of the board when the phone rings. If you have to work on the modem, turning off the computer isn't enough: **UNPLUG IT FROM THE PHONE LINE!!!**

The capacitor in series with the VM10B is rated at 200 volts. NEVER substitute a capacitor with a lower rating. Much higher voltages than the ring signal can appear across the line, due to lightning, or man made equipment failures.

VR1 is a varistor, which prevents the extra high voltage spikes from getting in. But there's a range of voltages it can't handle. A spike of only 150 volts or so would continue straight through. Transformer T1 isolates the phone line from the analog modem circuitry, and diodes CR4 and CR5 are sufficient to get the lower voltage spikes that pass the varistor, limiting the signal to a volt or so. Because of the transformer and the optoisolator, the phone circuitry is completely isolated from the rest of the modem. Any spikes that try to get through the transformer are stopped by the varistor and diodes. NEVER try to run without them.

Unfortunately, the modem CAN run without them; particularly it can run without the varistor which doesn't do anything until a voltage spike appears. Worse, if the varistor fails, or was bad to begin with (a certain percentage are, and we can't expect these boards to have been properly tested). It simply won't provide any protection at all, although the modem will continue to work happily right down to the fatal moment. The moral here is that you shouldn't even think of running one of these boards during a thunderstorm, when one is possible, or one might be in the distance. Even then, there's no guarantee of a clean phone line. Surge suppressors on your power line won't help here; if your phone line is unguarded through a bad varistor, you are vulnerable.

I am really sorry if this throws "cold water" on anyone's enthusiasm. I prefer to encourage enthusiasm, but everyone must be aware of the risks that may accompany these modem boards. A scrap disk drive or printer interface wouldn't have the same problems, as they're not hooked to such a hostile environment as the phone system. Modems are different. If you intend to use one of these boards, PLEASE be careful.



Poor Man's MODEM

by Anon., South Florida DDO
Boynton Beach, FL 33425-4751

Now you can send and receive programs by telephone, without a MODEM. In fact, all you need is a small transformer, an on/off switch, and an earphone jack - total price, about \$19.98.

The transformer must have about 500-600 ohms on the side that connects to the phone line, and about 50-100 ohms on the computer side (DC Ohms as read on any ohmmeter). I have found that the intermediate transformer in a solid state audio amp will usually work well as long as the resistance is as stated. The wiring is simple. The easiest way to do it is to build this into a cheap phone. If you don't have one, you will either have to buy one, or get a phone splitter such as Radio Shack #279-357 or #279-373 and a phone cord that has a modular plug on one end and wires on the other (#279-391 or #279-344). If you have the older type jacks that are wired to the wall, you may wire it in, but it should be able to be removed.

First connect the GREEN wire from the phone cord to one lead of the 600 ohm side of the transformer. Now connect the RED wire to one wire of the switch. The other wire of the switch goes to the remaining wire of the 600 ohm side of the transformer. Now all that is left is to connect the other two leads of the transformer to the earphone jack, or to a shielded cable terminating in an earphone jack. You can put it in a small box or build it into a cheap phone (which will avoid the purchase of a phone cord).

Using it is also simple. To send a program, set your volume on your recorder to about 1/4. Plug the cable into the phone and the earphone to the transformer. This is assuming that you have already called your friend. Now have him (her) plug their adapter into the phone and their MIC jack. Now have them start their recorder in RECORD mode and cover the phone's own mike, or hold MUTE on. Now play the program to them just as if you were loading your computer! After you have sent it, have them try to load it. If it won't load try a different volume level. I have even plugged the transformer into a cheap audio amp (Radio Shack #277-1988 \$11.95) and loaded the program right into the computer!

It will take some trial and error to find the right volume levels but if it saves some driving I think it's worth it!

[Ed. note: I don't know what Ma Bell would think about this project, but I guess she's got other things on her mind right now. Just don't fry the central office!]

Marcia B. had built a device such like this for Hylan C. some time ago. They say it works fine. Thanks to the Capital Area Group for this one. C.A.T.S.

GETTING MORE

From Your 2050 Modem

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Here are a few ideas to try with your 2050 and 2050 modem. Through trial and experimentation, I found the port addresses and some of the modem calls. So I learned how to program some tricks of my own, in BASIC.

The modem seems to use only ports 115 and 119. Port 119 serves to control the modem while 115 carries the actual data. Here are the modem calls I use. I got these from the TIMEX database on CompuServe.

OUT 119:0 Hangs up phone
OUT 119:1 Hangs up phone, but doesn't stop carrier
OUT 119:31 Initializes phone for AUTO-Dial
OUT 119:34 Starts Carrier tone
IF IN 119 = 133, the modem is connected

Port address 115 carries the data itself, in the form of ASCII code, which pretty well matches the character codes the 2050 uses. That being the case, it should be easy to whip up a BASIC program to handle data transfer. The routines I present here work once the modem connection has been made. Here's how to do that with SMART II.

Load and run SMART II. Once you are in the main menu, make sure that all the system parameters are established. I haven't gotten to that yet, so I do that from within the program. Make the call, and once the connection is made, and the info you need is coming out to the main menu, and EXIT to BASIC. Then you can RUN the following routines.

This will transmit data. A is the address where the character code is stored. In this case, 33280 is where Tasword stores code.

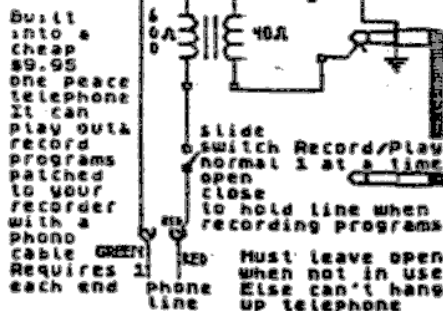
```
10 LET A=33280
15 ON ERR GOTO 60
20 PRINT CHR$(PEEK A):OUT 115,
25 PAUSE 1.5
30 LET A=A+1
40 GOTO 15
50 ON ERR RESET LET A=A+1
70 GOTO 15
```

This routine will download data to address A, here arbitrary. The length of PAUSE here is critical. You must experiment to match it to the rate of the host.

```
10 LET A=33280
20 POKE A, IN 115
30 ON ERR GOTO 70
40 PRINT CHR$(IN 115)
50 PAUSE 1.5
60 LET A=A+1
70 GOTO 20
80 ON ERR RESET: LET A=A+1
90 GOTO 20
```

There should be a lot of things to do with these routines. They could be used in some sort of integration software to create your own BES, or maybe even a terminal program in BASIC. Good Luck!

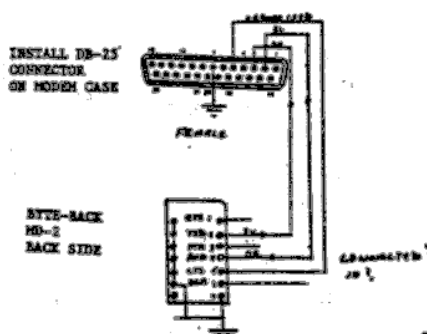
Poor Man's Telephone Modem



LIST Group

HACKERS NOTEBOOK Engineering Chart Sheets

Subject BYTE BACK TO IF I INTERFERE
RS232



2050 Pin #	GOES TO	2050 Pin #
1	Signal	A1
2	AD	A2
3	CTS	A3
4	DE	A4
5	GROUND	A5
6	RS	A6
7	RS	A7
8	RS	A8
9	RS	A9
10	RS	A10
11	RS	A11
12	RS	A12
13	RS	A13
14	RS	A14
15	RS	A15
16	RS	A16
17	RS	A17
18	RS	A18
19	RS	A19
20	RS	A20

SOFTWARE - TS1000 OUTPUT DATA
EX SPECTRUM ARCHIVE

TS1000 W/RETRYBACK
USE ASC II BASIC
PROGRAM SUPPLIED
BY BYTE BACK

EX SPECTRUM (IF ONE)
USE SOFTWARE IN
IF ONE MANUAL
(E.G., OPEN #4 ETC.)

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